AMENDMENT AFTER FINAL                                   JP920000257US1
August 2, 2005                                          Serial No. 09/943,341

## REMARKS

Claims 2 – 7 and 9 – 22 remain in the application. Claims 17, 18, 21 and 22 are
objected to. Claims 2 – 7, 9 – 16 and 19 – 20 stand finally rejected. A proposed
amendment to claim 15 is offered herein. The rejection of the claims is respectfully
traversed.

The specification has been amended to correct a typographical error. No new
matter has been added.

Claims 15 and 19 rejected under 35 U.S.C. §112, because it is asserted that
"'replacing said score sum with said aggregate sum, each said word score with a
corresponding said aggregated word score, each said sentence score with a corresponding
said aggregated sentence score', was not described in the specification in such a way as to
reasonably convey to one skilled in the relevant art the inventor(s), at the time the
application was filed, had possession of the claimed invention." Partially responsive
thereto a proposed amendment to claim 15 is offered herein, removing the allegedly
unsupported recitation. However, the applicants note that this deleted recitation is
directed to the iterative steps of Figure 2 of the application. As claims 15 and 19 recite,
each of the word score, sentence score and score sum are initialized before computing
each of the aggregate sum, aggregated word score, and aggregated sentence score. After
comparing corresponding sums, if the sums do not match, the scores are recomputed with
the aggregate scores replacing the previous values, i.e., "replacing said score sum with
said aggregate sum, each said word score with a corresponding said aggregated word
score, each said sentence score with a corresponding said aggregated sentence score" as
finally rejected claims 15 recites. While it is unimportant when this substitution occurs,
(whether as each new aggregate value is computed, when the decision is made for
another iteration, at the start/end of each iteration, etc.) it does occur. Thus, the recitation
in claim 19 of "computer program code means for... selectively replacing said score sum

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with said aggregate sum, each said word score with a corresponding said aggregated word score and each said sentence score with a corresponding said aggregated sentence score" would be well understood by a skilled artisan. Accordingly claim 15 as amended, and claim 19 are both supported by the specification as filed. Entry of the amendment, reconsideration and withdrawal of the final rejection of claims 15 and 19 under 35 U.S.C. §112 is respectfully solicited.

Claims 2 – 7, 9 – 16 and 19 – 20 are finally rejected under 35 U.S.C. §103(a) over the combination of U.S. Patent Application No. 2001/0021938 to Fein et al., U.S. Patent No. 6,766,287 to Kupiec et al. and U.S. Patent No. 6,334,132 to Weeks. The final rejection is respectfully traversed.

As recited in finally rejected claims 15 and 19, the present invention is an automatic method for generating summaries for text documents and a program product embodying the automatic method. Sentences are extracted from documents by document discourse analysis and words are extracted from the sentences by a morphologic process. Claim 15, lines 3 – 4. Characterization scores (a word score for each word, a sentence score for each sentence and a score sum) are initialized. *Id*, lines 5 – 6. Thereafter the characterization scores are iteratively re-calculated using the most current scores until the recalculated sum score does not change appreciably. So, an aggregated word score is computed for each word from an aggregate of sentence scores of sentences containing the word and to a degree of correlation between the word and user related information. *Id*, lines 7 – 9. Then, using those aggregated word scores, an aggregated sentence score is calculated for said each sentence from word scores for words in the sentence and a respective sentence position in a section and a paragraph. *Id*, lines 10 – 12. The aggregate sum of aggregated word scores and aggregated sentence scores is checked against the score sum, and if the aggregate sum is appreciably different from the score sum (i.e., the aggregate sum from the previous iteration), another iteration is begun. *Id*, lines 13 – 18. Once there is no appreciable difference, top-ranked sentences are output according to sentence score as a summary of the set of documents, and top-ranked words

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are output according to word score as a keywords list of the set of documents. *Id*, lines 19 – 21. Claim 19 has similar recitations.

In asserting the teachings of Fein et al., Kupiec et al. and/or Weeks, either each reference teaches the identical elements (*in haec verbis*) for which they are alleged to teach or, they are being cited as teaching equivalent elements. To assert that elements are equivalent, §2183 of the MPEP provides in pertinent part the examiner must find

> that a prior art element (A) performs the function specified in the claim, ...
> Factors that will support a conclusion that the prior art element is an
> equivalent are: (A) the prior art element performs the **identical** function
> specified in the claim in substantially the same way, and produces
> **substantially the same results** as the corresponding element disclosed in
> the specification."

(Emphasis added.) Thus, each element of Fein et al., Kupiec et al. and/or Weeks upon which the final rejection is based, must provide the identical function in substantially the same way as the invention, and produce substantially the same results.

It has been acknowledged in the final rejection of claims 15 and 19 that, "Fein does not explicitly disclose generating a set of sentences for a set of documents and computing the score for each sentence according to the position of the sentence in a section and a paragraph." It also has been acknowledged that Fein et al. does not disclose "the correlation degree between the word and the user information" as recited in claims 15 and 19. It is asserted, however, that "generating a set of sentences ... by document discourse analysis and a set of words by morphologic process; initializing ...; computing an aggregated word score ...; computing an aggregated sentence score ..." as recited in claim 15 with analogous recitations in claim 19, is taught in Fein et al. at paragraphs 0028 – 0039. It is asserted, further, that "comparing an aggregate sum with said score sum, said aggregate sum being a sum of aggregated word scores and aggregated sentence scores" as recited in claim 15 with analogous recitations in claim 19, is taught by Fein et al. at paragraphs 0015 and 0035 – 0037.

However, Fein et al. paragraph 0015 teaches a "document summarizer [that] performs a cue-phrase analysis [that] compares the sentence string to this pre-compiled list of cue phrases. Associated with each cue phrase are conditions which are used to

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determine whether a sentence containing that cue phrase will be used in a summary."
This is not "comparing an aggregate sum with said score sum, said aggregate sum being a
sum of aggregated word scores and aggregated sentence scores" as claim 15 recites with
analogous recitations in claim 19. Fein et al. Paragraphs 0035 – 0037 teaches
determining "a sentence score for individual sentences within the document according to
their respective content words." In particular, Fein et al. paragraph 0036 teaches that the
"Sentence Score=Sum of Word Frequency Counts.div.Number of Words" which is the
average word frequency per word in each sentence, and is completely different than "an
aggregated sentence score for said each sentence according to an aggregate of word
scores composing said each sentence" as recited in the finally rejected claims. Clearly,
none of this is "comparing an aggregate sum with said score sum, said aggregate sum
being a sum of aggregated word scores and aggregated sentence scores" as claim 15 (and
analogously claim 19) recites, even leaving aside that the Fein et al. sentence score is not
iteratively computed.

Regarding continuing to another iteration whenever the sums from two iterations
do not substantially match ("if said aggregate sum is different than said score sum,
returning to the step of computing the aggregated word score"), it is asserted that this is
taught by Fein et al. pages 2 – 3, paragraphs 0028 – 0039 and page 4, paragraph 0045 –
page 6, paragraph 0063. Fein et al. page 4, paragraph 0045 teaches "document
summarizer creates a summary containing the higher ranked sentences which survive the
cue-phrase analysis" with variations thereof in subsequent paragraphs. Fein et al. ranks
both words and sentences. *See, e.g.*, Tables 1 – 2. In one variation, Fein et al. teaches
that high ranking sentences may be omitted and ranks recomputed. Thus,

> the summarizer initially scores all of the sentences as above on the first
> iteration. Then, for the next iteration, the summarizer **removes the
> influence of the highest ranking sentence and re-scores the remaining
> sentences as if the highest ranking sentence was not present**. For the
> next iteration, the influence of the highest scoring sentence found in the
> previous iteration is removed, and the remaining sentences are again re-
> scored as if the two highest ranking sentences were not present. This
> process continues for all of the sentences.

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*See, e.g.*, page 5, paragraph 0055 (emphasis added) and Tables 4 – 6. So, while it may be asserted that Fein et al. teaches generating different sentence scores by iteratively eliminating sentences and re-scoring the remaining sentences, this is quite different from generating an aggregate sum, and "if said aggregate sum is different than said score sum, returning to the step of computing the aggregated word score" as recited in the finally rejected claims.

Neither does the addition of the teaching of Kupiec et al. alone, or further in combination with Weeks cure these failings of Fein et al. Even if one were to agree, *arguendo*, that Kupiec et al. teaches "generating a set of sentences for a set of documents and computing the score for each sentence according to the position of the sentence in a section and a paragraph" as recited in finally rejected claims 15 and 19, Kupiec et al. in combination with Fein et al. still does not result in the present invention. Similarly, it is of no moment whether Weeks teaches "the correlation degree between the word and the user information" and/or "the correlation degree between the word and the user information." Adding this asserted teaching of Weeks to Fein et al. and Kupiec et al. does not result in the present invention as recited in the finally rejected claims.

Accordingly, because Fein et al. alone, or in combination with Kupiec et al. alone, or further in combination with Weeks does not teach iteratively refining sentence and word scores until the sum of scores remains the same as recited in claims 15 and 19, Fein et al., Kupiec et al. and Weeks do not teach the identical function in substantially the same way as the invention, and produce substantially the same results. Therefore, the combination of Fein et al., Kupiec et al. and Weeks does not result in the present invention, as claimed in claims 15 and 19. Entry of the amendment, reconsideration and withdrawal of the final rejection of claims 15 and 19 under 35 U.S.C. §103(a) over the combination of Fein et al., Kupiec et al. and Weeks is respectfully solicited.

Further, because dependent claims include all of the differences with the references as the claims from which they depend, the combination of Fein et al., Kupiec et al. and Weeks does not result in the present invention as claimed in claims 2 – 7, 9 – 14, 16 and 20, which depend from claims 15 and 19. Reconsideration and withdrawal of

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the final rejection under 35 U.S.C. §103(a) of claims 2 – 7, 9 – 14, 16 and 20 over the

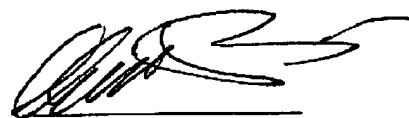combination of Fein et al., Kupiec et al. and Weeks is respectfully solicited.

The applicants thank the Examiner for efforts both past and present in examining

the application. Believing the Application in condition for allowance, both for the

amendment to the claims and for the reasons set forth above, the applicants request that

the Examiner enter the amendment to claim 15, reconsider and withdraw the objection to

claims 17, 18, 21 and 22, reconsider and withdraw the final rejection of claims 2 – 7, 9 –

14, 16 and 20 under 35 U.S.C. §103(a) and allow the Application to issue.

Should the Examiner believe anything further may be required, the Examiner is

requested to contact the undersigned attorney at the local telephone number listed below

for a telephonic or personal interview to discuss any other changes.

Please charge any deficiencies in fees and credit any overpayment of fees to IBM

Corporation Deposit Account No. 50-0510 and advise us accordingly.

Respectfully Submitted,

August 2, 2005
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